TECHNICAL DATA
DATASHEET 4113, REV A

Three-Phase IGBT BRIDGE, With Gate Driver and Optical Isolation

DESCRIPTION: A 600 VOLT, 150 AMP, THREE PHASE IGBT BRIDGE

ELECTRICAL CHARACTERISTICS PER IGBT DEVICE (T_j=25^{0}C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I_C = 250 µA, V_{GE} = 0V	BV_{CES}	600	-	-	V
Continuous Collector Current T_C = 25 ^{O}C T_C = 90 ^{O}C	I_C	-	-	150 130	A
Pulsed Collector Current, 1mS	I_{CM}	-	-	250	A
Gate to Emitter Voltage	V_{GE}	-	-	+/-20	V
Gate-Emitter Leakage Current , V_{GE} = +/-20V	I_{GES}	-	-	+/- 100	nA
Zero Gate Voltage Collector Current V_{CE} = 600 V, V_{GE}=0V T_j=25^{o}C V_{CE} = 480 V, V_{GE}=0V T_j=125^{o}C	I_{CES}	-	-	 3 20	 mA mA
Collector to Emitter Saturation Voltage, T_C = 25 ^{O}C I_C = 100A, V_{GE} = 15V,	$V_{CE(SAT)}$	-	1.7	2.0	V
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.25	^{o}C/W
Brake IGBT SPECIFICATIONS					
Continuous Collector Current T_C = 25 ^{O}C T_C = 90 ^{O}C	I_C	-	-	80 60	A
Pulsed Collector Current, 0.5mS	I_{CM}	-	-	120	A
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.45	^{o}C/W
Over-Temperature Shutdown					
Over-Temperature Shutdown	Tsd	100	110	120	^{o}C
Over-Temperature Shutdown Hysteresis			20		^{o}C
Over-Temperature Output	Tco		10		10mV/^{o}C

SENSITRON

TECHNICAL DATA

DATASHEET 4113, REV A

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
ULTRAFAST DIODES RATING AND CHARACTERISTICS					
Diode Peak Inverse Voltage	PIV	600	-	-	V
Continuous Forward Current, T_C = 90 ^{O}C	I_F	-	-	130	A
Forward Surge Current, t_p = 10 msec	I_{FSM}	-	-	500	A
Diode Forward Voltage, I_F = 100A	V_F	-	1.4	1.7	V
Diode Reverse Recovery Time (I_F=100A, V_{RR}=300V , di/dt=200 A/µs)	t_{rr}	-	90	160	nsec
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.4	^{o}C/W
Gate Driver					
Supply Voltage	VCC	10	15	20	V
Input On Current	HIN, LIN	2		5.0	mA
Opto-Isolator Logic High Input Threshold	I_{th}	-	1.6	-	mA
Input Reverse Breakdown Voltage	BV_{in}	5.0	-	-	V
Input Forward Voltage @ I_{in} = 5mA	V_F	-	1.5	1.7	V
Under Voltage Lockout	VCCUV	7.0	-	9.7	V
ITRIP Refernce Voltage (1)	Itrip-ref	1.45	1.5	1.55	V
Desaturation Over-Current Protection Blanking time (2)	tbl	3	5	TBD	µsec
Input-to-Output Turn On Delay Output Turn On Rise Time Input-to-Output Turn Off Delay Output Turn Off Fall Time At VCC=300V, IC=50A, T_C = 25	t_{ond} t_r t_{offd} t_f	- - - -		800 180 1000 160	nsec
Input-Output Isolation Voltage	-	1000	-	-	V

Maximum operating Junction Temperature	T_{jmax}	-40	-	150	^{o}C
Maximum Storage Junction Temperature	T_{jmax}	-55	-	150	^{o}C

(1) ITRIP Cycle-by cycle current limit is internally set to 70A peak. The set point can be lowered by connecting a resistor between Itrip-ref and Gnd. The set point can be increased by connecting a resistor between Itrip-ref and +5V ref

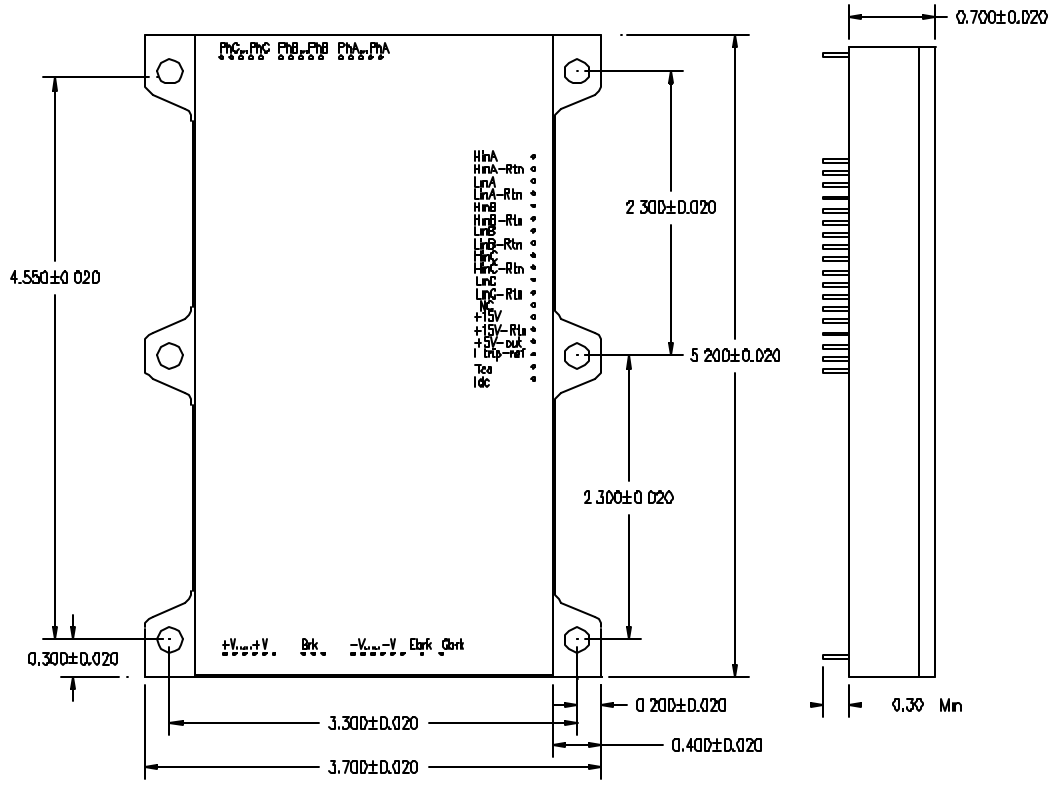
(2) Desaturation blanking maximum time is TBD and is only provided at the low-side IGBTs.

SENSITRON

TECHNICAL DATA

DATASHEET 4113, REV A

Package Drawing:



TECHNICAL DATA

DISCLAIMER:

1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the Sensitron Semiconductor sales department for the latest version of the datasheet(s).
2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
3- In no event shall Sensitron Semiconductor be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). Sensitron Semiconductor assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
4- In no event shall Sensitron Semiconductor be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
5- No license is granted by the datasheet(s) under any patents or other rights of any third party or Sensitron Semiconductor.
6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of Sensitron Semiconductor.
7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.